ELECTRONIC STRUCTURE OF OH·ISOPRENE ADDUCTS FROM ANION PHOTOELECTRON IMAGING SPECTROSCOPY

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Isoprene is the most prevalent non-methane volatile organic compound in the atmosphere, comprising about half of non-methane total biogenic emissions.[a] Oxidation of isoprene by hydroxyl radicals results in important and diverse atmospheric chemistry, including the formation of secondary organic aerosols and other atmospheric radicals.[b] However, the high reactivity of the hydroxyl-isoprene (OH-isoprene) complex with oxygen and water makes direct measurements difficult in situ. We utilize anion photoelectron spectroscopy as a "back-door" technique to examine vibrational and electronic structure of the OH-isoprene adduct. Spectral assignment is aided by quantum chemical calculations. Structural variations between anion and neutral species result in significant vibrational progressions. These progressions appear to resemble low electron binding energy features in the photoelectron spectrum, but additional higher electron binding energy features attributed to other species are also present. Potential explanations of these features will be explored.

[a] Guenther, A. *et al. J. Geophys. Res.* **100**, 8873–8892 (1995)

[b] Wennberg, P. O., *et al. Chem. Rev.* **118**, 3337-3390 (2018)